

Numerical simulation of ceramic material extrusion

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The paper is focused on computer simulations related to the extrusion of ceramic material for continuous 3D printing. The aim is to optimize the process of extrusion of ceramic material using numerical simulations. These simulations are essential for understanding fluid dynamics in 3D printers, especially when working with complex materials such as ceramic clays and clays with additives. The speed at which the material is extruded is optimized. Depending on the printed model, suitable nozzle sizes and layer thicknesses are selected. Based on these computer models, a universal custom ceramic 3D printer was developed. This printer can create mechanically stable shapes and add fine details and decorative elements to final ceramic prints.

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